

Rhodora

JOURNAL OF THE NEW ENGLAND BOTANICAL CLUB

Vol. 61

December, 1959

No. 732

REMARKS ON THE VIRGINIA LOCATION OF *SHORTIA GALACIFOLIA*¹

P. A. DAVIES

In the February, 1956, number of *Rhodora*, Dorothy L. Crandall published a location of *Shortia galacifolia* for Amherst County, Virginia.² This station is of interest because of its distance beyond the present known natural range of *Shortia* and because it is not associated with a formal garden.

On April 14, 1957, the writer in the company of Dorothy L. Crandall, Franklin Flint, and Mr. and Mrs. Samuel K. Roller, all of Amherst county, had the opportunity to visit and study the Virginia station. The colonies were as Crandall had described them. Plants were in flower so specimens were secured. Again on August 6, 1958, with Charles F. Moore, Brevard, North Carolina, this station was revisited, observations and measurements were again made and soil samples taken.

Crandall in her paper did not state whether she thought this station was natural or had been planted. The writer from his knowledge of the various types of *Shortia*, distribution of this plant in the Carolina mountains and elsewhere, culture requirements, and data obtained from the study of the Virginia station, believes it was planted. He places his judgment upon the following conclusions:

1. Virginia location is not the only flourishing station of *Shortia galacifolia* outside the known range. Its uniqueness lies in that no history is available as to when it was

¹ Contribution No. 29 (New Series) from the Department of Biology, University of Louisville.

² Crandall, Dorothy L., *Rhodora* 58: 38-40, 1956.

planted, by whom planted, or the source of the initial plants. Of the many scattered plantings, two are particularly outstanding, for not only are they at a greater distance beyond the natural range than the one described by Crandall but also in size and vigor are equal to or exceed it. On a west facing hemlock and oak covered hillside, as part of the Swarthmore College Campus, are two healthy patches. Charles F. Jenkins in 1942 gave the initial plants which came from a tributary of the Keowee River in Oconee County, South Carolina. The upper and larger patch, approximately five by eight feet, is more vigorous and is spreading by stolons in all directions. Measurements of stolon growth for the past two years indicate an average annual growth of from two to four inches. Separate young plants in various stages of development on the lower side of the patch show a more rapid spread in that direction through seed germination.

The other is in the garden of Mrs. Gilbert B. Mustins, Lansdowne, Pennsylvania. A steep, rocky west-facing hillside above Darby Creek was terraced with walks approximately three feet wide. Mature oak and beech trees top the slope while Rhododendrons, Kalmias and Azaleas form the cover toward Darby Creek. Between the walks are many healthy and spreading patches of *Shortia* varying in size from a few plants to more than three feet in diameter. Seeding has occurred freely and seedlings in various stages of development are distributed on the top and bottom faces between the walks. R. B. Chillias, Jr. has conservatively estimated that more than 1,000 plants are present in this garden.³

At Highlands, North Carolina and its environs, a shorter distance from the natural range than the Virginia station, are several successful plantings. T. G. Harbison made the first planting at his home in Highlands from plants he gathered along the Horsepasture River, Oconee County, South Carolina, in 1890. This has grown to be the largest known planted patch and is many times larger than the one Crandall discovered.

³ Chillias, R. B. Jr., Letter to P. A. Davies, October 15, 1958.

2. The small valley in which the Virginia station is located is not isolated, as it is known to the inhabitants of the area. It is close to Lynchburg and near well-traveled roads. Three pathways afford a ready entrance into the valley: one from the road above, another from the valley below and the third from the north. By converging they form the path which follows the small stream (Roller Creek) through the floor of the valley. Two springs at the head of the valley, one flowing mineral water, form Roller Creek. Evidence indicates that the valley has been used in the past and to some extent today, as an outing area or as a source from which mineral water can be obtained. Whoever made the planting knew the accessibility of the valley and favorable cultural conditions that were present.

3. No other location without a planting record is known to exist outside the natural range. During the past ten years, the writer has checked each patch that has come to his attention in which any doubt existed about its origin, and in every case, except Crandall's Virginia station, the source of the plants could be determined.

4. The small patches along Roller Creek are all that have been found for the area. Crandall and parties explored without success the region about Roller Creek and inquired about old gardens from which *Shortia* could have escaped. They also searched for several miles along the larger creek below Roller Valley without discovering additional plants. The writer checked the immediate hillsides above Roller Creek without finding a single source from which seeds, seedling or mature plants could have been carried or washed down to establish the plots.

5. The environment at the Crandall station is favorable for the growth of *Shortia*. However, it is no more favorable than other places in the immediate vicinity or closer to the natural range where none is present. It is more favorable than either the Swarthmore College or Mustins locations which support vigorous and expanding plots. The steep valley slopes above the patches in Roller Valley allow sufficient seepage to supply ample moisture to the limited root system and at the same time afford good drainage so necessary for survival. Leaf mold so important for the protection

of the extending rhizomes and for organic enrichment of the soil is present in adequate amount. Soil organic layer is thin but ample with a subsurface composed of loose decaying Lynchburg gneiss. Soil samples taken in the large patch and within a ten-foot radius give pH readings ranging from 4.8 to 5.1. This pH is comparable to that found along the lower part of the Toxaway River (Oconee and Pickens Counties, South Carolina) where *Shortia* is plentiful. Steepness of the valley with its small stream and the larger one close by in the valley below, maintain a moist air drift sufficient to equalize the cyclical summer and winter temperatures. Shade so indispensable for a healthy growth is present in ideal amount. Due to its deciduous nature the canopy allows enough light to reach the plants during late fall, winter and early spring while protecting them against over-exposure during the summer.

6. All patches along Roller Creek are small but healthy and expanding, indicating a short duration in this location. Had they been there for a long period one would be able to observe signs of retarded growth, which is not the case. Measurements of rhizome growth for the past two years show an annual extension of from two to four inches. This is comparable to that found in the Swarthmore College station and within the natural range in the Carolinas. Samuel K. Roller informed the writer that *Shortia* has been known in this location for about 50 years. Taking into account the possibility of unfavorable years, this period is more than sufficient for the expansion of the patch from a single planting.

The largest patch, approximately four by six feet, is the most favorably situated and is probably the original planting from which the others have originated. The next plot in size, approximately two by three feet, is situated on a small knoll close to the edge of the stream about 300 feet below the main patch. The structure of the stream bed at this place indicated that a dam was formed there creating a small pond which raised the water level to the top of the knoll. A seed or seedling carried down from the original patch and lodged on top of the knoll could have established

the clump. The other clumps are small and distributed along the stream, mostly above the original patch.

7. Davies has shown that variations exist between *Shortia* on the sources of the Keowee River (Oconee and Pickens Counties, South Carolina and Transylvania County, North Carolina) and those to the north and east on the tributaries of the Catawba River (McDowell County, North Carolina).⁴ In the former the plants are crowded in the colonies and the pistils are long in relation to the length of the mature ovaries while in the latter the plants are more openly distributed and the pistil-ovary index is shorter.

Plants in the Virginia station are crowded in the colonies and have a long pistil-ovary index which resembles closely the ones present on the tributaries of the Keowee River. It is reasonable to expect that if the Virginia station was a natural stand, the plants would resemble the closer ones on the sources of the Catawba River.

After Frank E. Boynton discovered in 1889 that *Shortia* could be obtained easily and in abundance on the sources of the Keowee River, particularly along the Whitewater River in Jocassee Valley, Oconee County, South Carolina, all the early stock for planting came from this area. After 1916 when the Toxaway Hotel was constructed it was also collected on the frequent tours that the management promoted to Bearwallow Creek in Transylvania County, North Carolina. Only in the past few years, because the distribution before this time was unknown, have collectors taken plants from the Catawba River area.

As the plants in the Crandall station, Amherst County, Virginia have been known for about 50 years, whoever made the planting must have collected the stock from the sources of the Keowee River or obtained it from a collector who gathered it from this area. — DEPARTMENT OF BIOLOGY, UNIVERSITY OF LOUISVILLE.

⁴ Davies, P. A., *Rhodora* 54: 121-124, 1952.